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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,746	01/12/2001	David A. Cathey	92-0466.04	9740
7590 11/04/2003			EXAMINER	
JAMES R DUZAN TRASKBRITT PC P O BOX 2550 SALT LAKE CITY, UT 84110			HARPER, HOLLY R	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.	Applicant(s)	
09/759,746	CATHEY, DAVID A.	
Examiner	Art Unit	
Holly R. Harper	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 8/8/03
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 23-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

The Amendment, filed on 8/8/2003, has been entered and acknowledged by the

Examiner.

Claims 23 and 25 have been amended.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 23-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bol (USPN 5,269,877) in view of Yeh et al. (USPN 4,400,866) in further view of Brodie (USPN 5,063,327).

In regard to claims 23-27, 31, 32, the Bol reference discloses an emitter comprising a substrate. The substrate has a planar surface and at least one protuberance (Figure 6). Bol discloses an emitter having a substrate (12) formed of a homogenous first material (Column 3, Line 16), a tapered protuberance (22) integrally from the first material with a base (24) and an apex (26), and a dopant gradient (Column 3, Lines 25-27). It is noted that the claimed process by Bol for making a tip, as recited in claim 1, does not include a base substrate. Bol claimed a process for forming a tip microstructure directly from a single layer substrate. Bol teaches

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forming a poly-silicon layer 12 on a silicon substrate 10. It is noted that a semiconducting substrate is an art recognized equivalent to a poly-silicon layer or a silicon substrate for the purpose of forming a semiconducting device. See Yeh et al. (Column 4, Line 67 – Column 5, Line 2) incorporated by reference by Bol (Column 3, Line 48-53). It would have been obvious to use a semiconducting substrate instead of a poly-silicon layer on a silicon substrate, as disclosed by Bol, because the two structures are art recognized equivalents for the purpose of forming a semiconducting device as evidenced by Yeh.

Bol is silent as to a dopant concentration that is zero at the base. It is the position of the examiner that specifying a dopant gradient is within the skill of the art. See Bol (Column 3, Lines 49-57). See Yeh (Column 4, Lines 10-15, wherein the doping level is selected to give the desired oxidation rate). It is noted that the specification does not teach that the subject limitation solves any problems over the prior art, or has any unexpected advantages over the prior art. Consequently, it would appear that the subject limitation is, at best, an arbitrary design choice within the skill of one having ordinary skill within the art. It would have been obvious to have a dopant gradient of zero at the base of the emitter as disclosed by Bol because the specification of the dopant gradient is within the skill of the art, as evidenced by Yeh.

Bol in view of Yeh discloses an emitter device. Bol is silent as to the emitter disposed in a pixel, display panel, or an FED. Bol teaches that the emitter (tips 43) provides for ease of manufacturing. Brodie discloses an emitter disposed in a pixel (36) or a display device (Fig 1). It would have been obvious to dispose the emitter, as disclosed by Bol, in a pixel or display panel, as disclosed by Brodie, to simplify manufacturing.

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Claims 27-30 are directed to product-by-process claim limitations and are not afforded patentable weight. Furthermore, it is noted that the functional language of an “etch-resistible quantity” or “oxidizable quantity” is intrinsic to the dopant concentration gradient.

Consequently, the subject claims are rejected for the same reasons as claim 27.

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*Response to Arguments*

4. Applicant's arguments filed 8/8/2003 have been fully considered but they are not persuasive.

Regarding applicants claim that Bol in view of Yeh does not disclose an emitter made from a single layered substrate, the examiner respectfully disagrees. The claimed process for making a tip, as recited in claims 1-13 by Bol, do not include a base substrate. Therefore, Bol discloses a process for forming a tip microstructure directly from a single layered substrate. An additional material is disclosed by Bol as being under element 12, but additional elements are not precluded in the open-ended claim of the applicant.

Regarding applicants claim that Bol in view of Yeh does not disclose that the dopant gradient would not be zero at the base, the examiner respectfully disagrees. Bol discloses that the concentrations of the impurities determine the rate of oxidation (Column 1, Lines 51-53). In order to control the oxidation to create an emitter tip that levels out to have a base on either side (Figure 17) then the base of the emitter tip would have to be dopant free. Otherwise, there would be only a tip shaped emitter with no base on either side.

***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Harper whose telephone number is (703) 305-7908. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

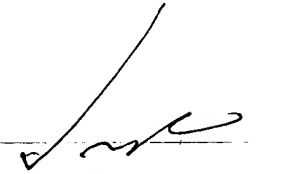
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Holly Harper  
Patent Examiner  
Art Unit 2879

  
**VIP PATEL**  
**PRIMARY EXAMINER**